

A NEW SPECIES OF *BURBUNGA* DISTANT (HEMIPTERA: CICADIDAE) FROM NORTHEASTERN QUEENSLAND

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Abstract

Burbunga mouldsi sp. n. is described and illustrated from the tablelands and western slopes of the Great Dividing Range in northeastern Queensland.

Introduction

The genus *Burbunga* was erected by Distant in 1905 to accommodate *Tibicen gilmorei* Distant, 1883 and a new species, *Burbunga inornata* Distant. During subsequent years a further four species were described: *B. hillieri* Distant, 1906, *B. albofasciata* Distant, 1907, *B. venosa* Distant, 1907 and *B. aterrima* Distant, 1914. Moulds (1994) described two additional species: *B. queenslandica* Moulds and *B. parva* Moulds. Moulds (1990) also transferred *B. aterrima* into the genus *Macrotristria* Stål. At the time of preparing this paper, seven species were included in *Burbunga* (Moulds and Cowan 2002). Moulds (in press) has since further defined the genus and modified its species composition. Nevertheless, the new species described herein meets all of the criteria necessary to be included in *Burbunga* and this falls in accordance with the aforementioned work (Moulds pers. comm.).

The new species, *B. mouldsi* sp. n., is smaller than the seven previously known species and seems to be inaudible to the average human ear at distances greater than about 30 metres. Moulds (2008) identified and described several morphological features, including the anterior and posterior cranial depressions. Two additional cranial depressions were overlooked by Moulds, one anterior to the anterior cranial depression and another lateral to the posterior cranial depression. Under magnification, cranial depressions are more distinct in *B. mouldsi* sp. n. than in other described species in the genus.

Terminology follows that of Moulds (2005). The following abbreviations are used: AMS – Australian Museum, Sydney; JO – author's collection; MSM – collection of M.S. Moulds; PH – collection of P. Hutchinson; LP – collection of L. Popple; MT – collection of M. Tkalecivic.

Burbunga mouldsi sp. n.

(Figs 1-8)

Types. *Holotype* ♂, QUEENSLAND: 32 km WNW Mt Carbine, 21.xii.2003, J. Olive, K308774 (AMS). *Paratypes*: all from QUEENSLAND: 1♀, 32 km WNW Mt Carbine, 21.xii.2003, J. Olive, K308775; 2♂♂, 36 km WNW Mt Carbine, 19.xi.2005, J. Olive & J. Thompson, K308776, K308777 (all AMS); 35♂♂, 36 km WNW Mt Carbine, 19.xi.2005, J. Olive & J. Thompson; 3♂♂, 1 km past Bob's lookout, Mt Carbine, 2.xii.2006, J. Olive; 3♂♂, 30 km WNW Mt Carbine, 27.x.2007, J. Olive; 1♂, 36 km WNW Mt Carbine, 31.xii.2006, J. Olive; 2♂♂, 36 km WNW Mt Carbine, 18.ix.2008, J. Olive; 6♂♂, 30 km WNW Mt Carbine, 7.xii.2004, J. Olive; 1♀, 36 km

WNW Mt Carbine, 19.xi.2005, J. Olive & J. Thompson; 1♂, 1♀, 36 km WNW Mt Carbine, 25.x.2005, J. Olive; 5♂♂, 32 km WNW Mt. Carbine, 21.xii.2003, J. Olive (all JO); 2♂♂, 36 km WNW Mt Carbine, 19.xi.2005, J. Olive & J. Thompson (PH); 2♂♂, 30 km WNW Mt Carbine, 13.x.2007, J. Olive; 2♂♂, 30 km WNW Mt Carbine, 7.xii.2004, J. Olive; 1♂, 32 km WNW Mt Carbine, 21.xii.2003, J. Olive; 1♂, 32 km WNW Mt Carbine, 25.x.2005, J. Olive; 2♂♂ (1 genitalia preparation BUR 29), 2.8 km W Mt Carbine, 29.ix.1990, M.F. Braby; 1♂, 17.6 km SW Dimbulah, 19.x.1990, M.F. Braby (all MSM). 1♂, Chewko Rd, Walkamin, 17°04,20'S, 145°22,24'E, 18.xii.2006, L. Popple, M. & A. McKinnon, Reg. no. 023-0001; 1♂, Chewko Rd, Walkamin, 17°02,52'S, 145°22,26'E, 18.xii.2006, L. Popple, M. & A. McKinnon, Reg. no. 023-0002; 1♂, 10 km W Mt Carbine 16°30,26'S, 145°02,19'E, 18.xii.2006, L. Popple, M. & A. McKinnon, Reg. no. 023-0003; 8♂♂, Chewko Rd, Walkamin, 17°02,33'S, 145°22,55'E, 20.xii.2006, L. Popple, M. & A. McKinnon, Reg. nos. 023-0004 to 023-0011 (all LP); 2♂♂, 36 km WNW Mt Carbine, 19.xi.2005, J. Olive & J. Thompson (MT).

Description. Male (Fig. 1). Head brown or sometimes dark brown, paler posteriorly, central area around ocelli dark brown to black; ocelli light brown to reddish amber; four black cranial depressions, here identified as anterior, intermediate, posterior and lateral, situated either side of midline (Fig. 3), the posterior cranial depressions sometimes concealed beneath the anterior margin of pronotum or absent and more-or-less in line with intermediate and anterior cranial depressions; anterior margin of antennal plate cream, the cream coloration sometimes extending almost to eye; postclypeus brown with dorsal surface usually dark brown to black, paler at posterior margin, a cream patch distally at midline; transverse ridges brown, transverse grooves densely covered with silvery-white cilia; lorum brown with cream outer margin, dark brown to black adjacent to anteclypeus; rostrum light brown basally becoming dark brown to black distally, reaching distal margin of hind coxae or just beyond; antennae brown, sometimes dark brown to black apically; eyes black or brown in dried specimens.

Thorax with pronotum light brown, a broad dark brown fascia at midline becoming broader anteriorly and expanded laterally at anterior margin and adjacent to pronotal collar; posterior margin of pronotal collar pale brown to cream; lateral and paramedian fissures often dark brown; a broad shallow depression running parallel to midline extending posteriorly from the paramedian fissure. Mesonotum brown, scutal depressions black, area between scutal depressions dark brown, this dark brown coloration extending to submedian sigilla; lateral and submedian sigilla dark brown; arms of cruciform elevation cream to light brown, anterior ascending wall dark brown to black, lateral ascending walls often with some dark brown coloration and densely covered with silvery-white cilia.

Legs light brown; two darker brown linear fasciae extending full length of each mid and hind femur; the fore femur with two broad dark brown fasciae one on either side of midline extending almost its length and a shorter broad fascia at its base on outer side.



1



2

Figs 1-2. *Burbunga mouldsi* sp. n.: (1) male; (2) female. Approximately 3 times natural size. Wing membranes are completely hyaline; image has some colour aberration.

Opercula (Fig. 4) widely separated by abdominal sternite 1, broadly rounded with medial margins near straight, lateral margins almost straight or slightly curved in some individuals, distal margin gently curved, disto-medial margin strongly curved; pale brown to yellowish; liberally covered with fine white cilia and a varying amount of white waxy exudation.

Wings with forewings hyaline; vein RA_2 and veins forming bases of apical cells 2-7 dark brown; infuscation adjacent to dark brown veins forming a zigzag pattern; infuscation absent at base of apical cell 6 but present at extremities of median veins adjacent to ambient vein; apical cell 1 often totally infuscated; basal membrane light orange in live specimens; basal cell mostly hyaline or partly translucent light brown. Hind wings hyaline with ambient vein and basal veins of apical cells 1-4 often dark brown to black; jugum opaque grey-brown; vein 3A prominently black; rest of anal lobe hyaline except for plagal area.

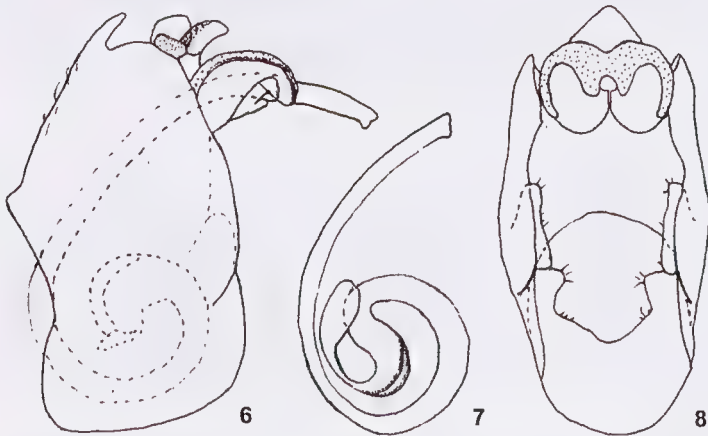
Abdomen brown; posterior margin of tergites light brown to cream; tergite 1 with structural groove adjacent to timbals dark brown to black (Fig. 5); tergite 2 pale brown to cream sub-dorsally; tergites densely to moderately covered with silvery-white cilia, tergite 8 often more densely covered; sternites yellow brown, posterior margins more yellow, sternite 1 swollen outwards between opercula, a black mark at midline between sternites 2-3.



Figs 3-5. *Burbunga mouldsi* sp. n.: (3) head and pronotum, dorsal view, showing cranial depressions, 1–anterior, 2–intermediate, 3–lateral, 4–posterior; (4) male left operculum showing white waxy exudation; (5) timbal showing structural groove.

Timbals (Fig. 5) with 5 ribs, two short ribs and three long ribs of similar length; rib 5 shorter than rib 4, rib 4 often wider ventrally, ribs 1 and 2 always joined at ventral extremities, the ventral extremity of rib 3 usually clearly separate but sometimes meeting rib 2. Timbal covers absent with posterior margin of timbal cavity weakly ridged.

Genitalia (Figs 6-8). Pygofer with distal shoulders developed into rounded lobes; basal lobes weakly developed, mostly hidden in lateral view; dorsal beak usually curved downward but sometimes angled downward from its base. Uncus almost circular in dorsal view with apex notched, arched in lateral view and deeply excavated below. Aedeagus (Fig. 7) tubular, strongly curved, basally spiralled, apically slightly trumpet-shaped, without ornamentation. The male genitalia are typical of *Burbunga* in having short uncal lobes, no upper pygofer lobes, small basal lobes and a theca that is spiralled basally (Moulds in press).



Figs 6-8. *Burbunga mouldsi* sp. n., male genitalia: (6) lateral view, aedeagus in situ; (7) lateral view of aedeagus; (8) ventral view, aedeagus removed.

Female (Fig. 2). Similar to male; ovipositor sheath extending to just beyond anal styles and dorsal beak. Ovipositor black on about basal two thirds, apical one third or a little less orange-brown.

Measurements. The range and mean (in mm) measured for 13 males and 3 females, including the largest and smallest available, are: Body length – male 13-14.5 (13.76), female 14-15.5 (14.6); forewing length – male 15.75-17.75 (16.7), female 17.5-18 (17.8); head width – male 5, female 5.25-5.5 (5.3); pronotum width – male 5.25-5.75 (5.55), female 5.5-5.75 (5.58); abdomen width – male 5.75-6.25 (6.2), female 5.5-5.9 (5.76).

Distinguishing features. *Burbunga mouldsi* more closely resembles *B. queenslandica* than any other described species in the genus. It differs from *B. queenslandica* in being considerably smaller and the forewing infuscation in *B. mouldsi* terminates at the extremity of vein m-cu, whereas in *B. queenslandica* infuscation extends further, to the extremity of vein CuA₂. Distal shoulders of the pygofor are rounded in *B. mouldsi* and pointed in *B. queenslandica*.

Etymology. Named in honour of Max Moulds, in recognition of his lifetime study of Australian cicadas and cicada taxonomy.

Distribution and habitat. This species has been recorded from the western slopes of the Great Dividing Range in northern Queensland, from 2.8-36 km WNW of Mt Carbine. It has also been recorded south of Mareeba at Walkamin and Dimbulah. Specimens have been collected from 18 September to 31 December. They are found in open woodland with an understorey of sparse shrubs and grass. Adults inhabit many of the small shrubs, such as *Stylosanthes scabra* 'shrubby stylo' (Fabaceae), and flower stems of grasses. They are also found on the trunks and stems of small tea-trees, *Melaleuca* sp. possibly *M. stenostachya* (Myrtaceae), and have been observed between 100 mm and 1.5 metres above ground level.

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